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I, LEANNE MYNOTT, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Complete specification in connection with Application No. 47543/99 for a patent by FRANK UHLIK filed on 14 September 1999.

WITNESS my hand this  
Eleventh day of October 2000



LEANNE MYNOTT  
TEAM LEADER EXAMINATION  
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**Complete Specification  
Standard Patent**

**GLUTEN SUBSTITUTE**

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**The following statement is a full description of this invention,  
including the best method of performing it known to me:**

# Gluten Substitute

This invention relates to the creation of a gluten substitute that can be used in a wide range of products including, but not limited to, breads, cakes and pastries.

As is known, bakery products are commonly made from wheat flour containing gluten, said gluten contributing to the typical texture, flavour and form of the usual bread, cake and pastry products.

However, a substantial segment of the population suffers from dietary wheat intolerance such as Celiac disease and other less well defined wheat intolerances and allergies which make wheat based products unacceptable for use. These people have few alternatives when it comes to baked products.

Typically gluten-free flours have very little, if any, binding power. When mixed they usually form pastes or slurries but can't create dough in the way wheat or other gluten based flours can.

The usual way to make gluten-free bread, for example, is to mix gluten-free flour with water, eggs, salt, sugar, yeast, milk and a small amount (.5 wt% to 5wt%) of binding agent, usually xanthan gum, guar gum or pre-gelatinised starch, normally referred to as a gluten substitute. The resulting breads are very cake like and heavy. Mouth feel, and texture are generally unpleasant and many people faced with the prospect of eating such breads decide not to eat breads at all.

By further example, a dough can be made from gluten-free flour mixed with commercially available gluten. If the gluten is mixed with these flours in the amount of 15 wt% to 20 wt% (note that this is 3 to 40 times greater volume than the above mentioned gluten substitutes) and then combined with water, a strong dough results, capable of being manipulated in much the same way as dough made from naturally occurring gluten based flours. However, this dough now obviously contains gluten and is useless to the gluten intolerant person.

Casual observations of commercially available gluten powder, when mixed with water show some distinct and easily recognisable properties. Said mixture quickly becomes a very strong gum that takes considerable effort to stretch or snap. When snapped into separate pieces, it can be re-constituted into a single whole simply by kneading it back together. If left to dry, it forms a shiny skin whilst remaining moist on the inside.

The invention described herein is a gluten substitute that in its powdered form can be added to any flour, gluten-free or otherwise, in any amount but optimally around 30 wt%, that duplicates as near as possible the characteristics of gluten. Mimicking gluten, it also very quickly becomes a

strong gum (approximately 50% as strong as gluten, by casual observation) that takes considerable effort to stretch or snap. When snapped into separate pieces, it can also be re-constituted into a single whole simply by kneading it back together and if left to dry, it forms a shiny skin whilst remaining moist on the inside.

When mixed with a flour in optimal quantities (30 wt%) the invention allows a dough to formed quickly. This dough absorbs water at a similar rate to wheat dough, gets stronger with kneading and can be stretched or rolled to very thin consistency similar to wheat based doughs.

While the invention will now be described in connection with certain preferred embodiments in the following example so that it may be more fully understood, it is not intended to limit the invention to these particular embodiments. On the contrary it is intended to cover all alternatives, modifications and equivalents as may be included within the scope of the invention as defined by the appended claims. Thus, the following example which includes preferred embodiments will serve to illustrate the practice of this invention, it being understood that the particulars shown here are by way of example and for illustrative purposes only, and are presented to provide what is believed to be the most useful and readily understood description of formulation procedures as well as of the principles and conceptual aspects of the invention.

#### Method of manufacture

Dry gluten-free flours are measured to the desired quantity. Water is added to form a wet paste consistency. The paste is then heated by microwave until the paste aerates and expands to about 3 times its original size and then bakes solid. The resultant mass is allowed several minutes to cool and is then crushed into small pieces of approximately one centimetre in diameter. The small pieces are then ground by a flour mill or similar to create a powdered gum.

#### Example

Mix the following quantities

65.5 gram	43.7 wt%	Tapioca Flour
16.3 gram	16.3 wt%	Soy Flour
60.0 gram	40.0 wt%	Water

Divide the paste into two equal quantities and place into microwave safe containers. Bake in 600 watt microwave oven for around 5.5 to 6 minutes at maximum setting. Remove from oven and allow to cool. Crush cooled mass and mill.

It will be evident to those skilled in the art that the invention is not limited to the details of the foregoing example and that the invention may be applied in other ways without departing from its essential attributes. It is therefore

desired that the example be considered in all respects as being illustrative and not restrictive, reference being made to the appended claims, rather than to the foregoing description, and all changes which come with the meaning of the claims are therefore intended to be embraced therein.

The claims defining the invention are as follows:

1. A gluten substitute produced by mixing gluten-free starches with water, rapidly baking the mixture in a microwave oven until it forms a highly aerated solid mass which is then crushed and milled to form a powder.
2. A gluten substitute according to claim 1, wherein said starch is obtained from the group consisting of tapioca flour, soy flour, corn flour, rice flour, potato flour, sweet potato flour and buckwheat flour.

Frank Uhlik

12 September 1999

## Abstract

The invention provides a gluten substitute consisting of mixed gluten-free starches combined with water, rapidly baked to form a highly aerated mass which is then crushed and milled.